

GP-302986

REAL TIME LIFE MODELS FOR
AUTOMATIC TRANSMISSION FLUIDS

ABSTRACT OF THE DISCLOSURE

The remaining useful life of a transmission fluid in a vehicle is continually estimated by a transmission control computer module during vehicle operation using both an oxidation model and a shift energy model.

- 5 The oxidation model uses experimentally determined remaining useful fluid life values obtained at temperatures experienced by the fluid in transmission usage and subtracts incremental values from said life based on the temperature-time experience of volume fractions of the fluid in the sump and torque converter. The shift energy model starts with an estimated maximum
- 10 number of shifts and continually obtains a current remaining useful life by deducting for actual shifts and estimated shift energy inputs based on fluid temperature. Notice of end of fluid useful life is given when one of the models first determines no remaining useful fluid life.